

From: Sheldrake, Sean
To: bayuk.dana@deq.state.or.us
Cc: [Laura Klasner Shira](mailto:Laura.Klasner.Shira@yacamafish-nsn.gov); [Rose Longoria](mailto:Rose.Longoria@yacamafish-nsn.gov); [Mcclure Tosch](mailto:Mcclure.Tosch@yacamafish-nsn.gov); [Lance Peterson](mailto:Lance.Peterson@cdmsmith.com); [Eva DeMaria](mailto:Eva.DeMaria@epa.gov)
Bcc: [Zhen Davis](#)
Subject: Draft letter to NWN, empirical offshore, porewater data
Date: Wednesday, March 29, 2017 12:35:00 PM
Attachments: [image007.png](#)
[image008.png](#)
[image009.png](#)

Hello Dana,

I was just wondering if you had any thoughts you'd like to share on this draft letter to NWN? As we've discussed, I see the model as having utility, but empirical evidence of such in my view will guide our cap designs throughout the harbor.

(YN is cc'd as they indicated interest in more real time s/c communication).

Thank you and hope your week is going well.

S

April 24, 2017

Mr. Bob Wyatt
NW Natural
220 NW 2nd Avenue
Portland, Oregon 97209

sent via email only

Mr. Myron Burr
Siltronic Corporation
7200 NW Front Avenue, M/S 20
Portland, Oregon 97210-3676

Gasco Groundwater Modelling Report, NW Natural Site

Dear Sirs:

The U.S. Environmental Protection Agency (EPA) has completed its review of the report titled *Gasco Groundwater Modelling Report, NW Natural Site* (model report) dated February 17, 2017 prepared by Anchor QEA, LLC on behalf of NW Natural. EPA acknowledges its comments on the model report were adequately addressed and the model report is approved consistent with the Oregon Department of Environmental Quality's (ODEQ's) letter dated December 30, 2016.

EPA notes NW Natural's intention to potentially apply the groundwater model as part of a design of a Gasco sediment remedy (presumably a sediment cap) as noted in the last sentence of the model report which states: "In summary, the particle tracking simulations showed that the HC&C system captures upland alluvial groundwater before it discharges to the river, maintains an upward gradient from the Deep Lower Alluvium to Lower and Upper Alluvium WBZs in DNAPL zones, **and provides off-shore seepage control**" [bolded for emphasis]. EPA does not agree that off-shore seepage control has been demonstrated due to the lack of data from within the navigation channel and the potential limitations of the model offshore. The groundwater model assumes (as shown in model report Figure 5-3) that the Willamette River is in direct connection with the Upper Alluvium,

from which the hydraulic control and containment system is hydraulically connected. Just offshore, however, the presence (in the model and data) of the Upper Alluvial Silt layer hydraulically separates the shallowest river sediments from the Upper Alluvium. The offshore extent and competency of this Upper Alluvial Silt is unknown. Therefore, model-based assertions of seepage control that are not coupled with empirical data should be understood to have a high degree of uncertainty.

EPA considers the primary lines of evidence to demonstrate off-shore seepage control to be empirical data to corroborate the groundwater model results and give confidence to model predictions. Such empirical lines of evidence should include measurement of vertical upwelling at the sediment-water interface in proposed capping areas using seepage meters and/or piezometers. However, groundwater upwelling is not the only factor influencing sediment cap performance at the Gasco Site. Site specific parameters, contaminant characteristics, and cap material properties all play a crucial role in cap design. Passive sampling devices measuring porewater concentrations of contaminants in the sediments at proposed capping locations would provide further evidence of seepage control. EPA will not make decisions on the model conclusions without verifying that it matches with empirical lines of evidence.

Please let me know if you have any questions or concerns about this letter at (206) 553-1220 or via email at sheldrake.sean@epa.gov.

Sincerely,

Sean Sheldrake, RPM

Cc: Eva DeMaria, EPA
Dana Bayuk, ODEQ

via email only

Sean Sheldrake, Unit Diving Officer, RPM
EPA Region 10, 1200 Sixth Ave., Suite 900; Mailstop DOC-01
Seattle, WA 98101
206.553.1220 desk
206.225.6528 cell
<http://yosemite.epa.gov/r10/cleanup.nsf/sites/ptldharbor>

